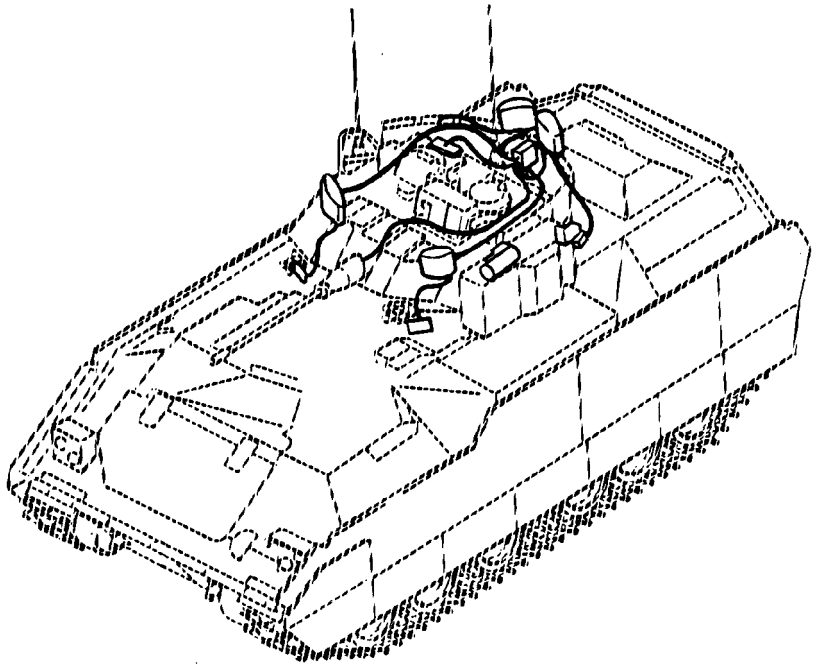
OPERATOR'S TRAINING COURSE
FOR
PRECISION GUNNERY SYSTEM
(PGS)

for

FIGHTING VEHICLE, INFANTRY: M2, M2A1, AND M2A2
AND
FIGHTING VEHICLE, CAVALRY: M3, M3A1, AND M3A2



This training document supercedes Operator's Training Course for Precision Gunnery System (PGS) for M2/.M3, dated 9 June 1995, and Change 1.

NOVEMBER 1995

FOR INFORMATION ON FIRST AID, REFER TO FM 21-11.

BROW PADS

WARNING

DO NOT use brow pads if foam is damaged. Failure to follow this warning may result in injury or blindness to personnel.

CABLE CONNECTORS

WARNING

DO NOT connect or disconnect cable connectors unless vehicle master power switch is in OFF position and TURRET POWER switch is in OFF position. Failure to follow this warning may result in injury or death to personnel if turret or 25 mm gun move suddenly.

SYSTEM INSTALLATION AND REMOVAL

WARNING

Vehicle master power switch and turret power switch must be in OFF position before installing or removing system components. Failure to follow this warning may cause turret or 25 mm gun movement, resulting in injury or death to personnel.

WARNING

Turret traverse lock must be engaged before installing or removing components/cables or entering turret. Failure to follow this warning may result in injury or death to personnel.

TRANSCEIVER UNIT

WARNING

Transceiver unit has an eye-safety classification of 3A. During operation, DO NOT view the transceiver unit with an unaided eye for an extended period of time. DO NOT AT ANY TIME view the transceiver unit with an aided eye, i.e., optics which magnify from a distance less than 25 m.

FOR
PRECISION GUNNERY SYSTEM
(PGS)

for

FIGHTING VEHICLE, INFANTRY: M2, M2A1, AND M2A2
AND
FIGHTING VEHICLE, CAVALRY: M3, M3A1, AND M3A2

TABLE OF CONTENTS

PREFACE

1-1. GENERAL.

This training course is designed to provide a systematic approach to training Bradley Fighting Vehicle (BFV) crews in the use of the Precision Gunnery System (PGS). Each lesson in the training course includes lesson plans, instructor notes, and viewgraphs. The use of the lesson package will allow the trainer to tailor lessons based on his unit's particular training needs. PGS training standards are discussed in detail to promote standardization in training with PGS. Proper application in the use of PGS will provide the commander with an effective training tool with which to train vehicles crews in precision gunnery skills.

1-2. PURPOSE.

The purpose of this training course is to assist unit instructors in conducting PGS equipment training. Further objectives of this training course are to:

a. ensure PGS equipment training is technically correct and meets both soldier's and unit's needs;

b. employ training techniques which will reduce training time and conserve training resources;

c. standardize PGS training to ensure it is compatible with other laser-based training systems employed by combat and combat support branches of the Army and Marine Corps; and,

d. reduce instructor preparation time by providing lesson plans, viewgraphs, training resources lists, and other training support information.

1-3. PGS EQUIPMENT TRAINING.

a. **Technical Proficiency and Standards.**

(1) The value of PGS training depends on users' proficiency with and understanding of the PGS equipment. It is possible to conduct precision gunnery training with a limited understanding of how PGS works; however, the cost of incomplete or inadequate training causes the following:

(a) Reduced availability of PGS equipment. Improper preoperation inspections and troubleshooting results in equipment damage or total equipment failure. The cost of repairing these damages places a large demand on the unit's maintenance systems both in dollars and manpower.

1-3. PGS EQUIPMENT TRAINING (Con't).

(b) Reduced training effectiveness. The crew's inability to conduct proper preoperation checks or their inability to properly place PGS into operation reduces the accuracy of the overall system. This causes frustration among the crew and reduces the effectiveness of the training.

(c) Reduced training interest. PGS has the potential to make gunnery training exciting and interesting for the crew. An inoperable PGS results in boredom and frustration. Vehicle crews that practice skills that lead to improper mounting and alignment quickly become discouraged and lose interest in training.

(2) Standardization of PGS training reduces or eliminates the problems covered above by focusing on two critical areas of training. These are:

(a) conducting thorough preoperational checks and inspections; and
(b) mounting and operating PGS properly.

b. **Demonstrations.** Each period of training should begin with detailed demonstration of how to inspect, inventory, and conduct preoperational checks on PGS equipment. These checks are critical to successful PGS training and need to be stressed.

c. **Practical Exercise.** Following the demonstration of preoperational checks and inspections, a detailed demonstration and practical exercise on how to mount and place PGS into operation follow. This portion of instruction also covers the alignment of PGS to the fire control system of the host vehicle. Emphasis must be placed on how to mount PGS in a manner which will keep it from being broken or damaged during training and not interfere with the operation of the weapon system.

1-4. UNIT TRAINING PROGRAM.

To achieve maximum benefit from PGS training, it must be integrated into the unit training program. However, specific training guidance as outlined in this training course must be followed by the instructors.

1-5. SCOPE OF INSTRUCTION.

The scope of instruction must be adjusted to meet the unit's specific training needs. Table 1 on page v identifies the lessons in the M2/M3 series PGS training course.

a. **Equipment Required.** Each lesson has its own equipment requirements. Specific items needed to effectively conduct PGS training are outlined in detail in each lesson plan.

1-5. SCOPE OF INSTRUCTION (Con't).

b. **Schedules.** Prior to scheduling any training, review the resource requirements and confirm training areas, pyrotechnics (if used), and PGS equipment are available on the dates required.

c. **Instructor Selection.** Whenever possible, select instructors who are current in PGS training. If none are available, attempt to locate NCOs who have received training at a service school or academy.

d. **Uniform and Equipment.** The uniform and equipment required for student personnel must be identified and complete. Specific equipment requirements are outlined in each lesson plan in the training course. PGS training uniform and equipment should be included on the unit's training schedule.

Table 1. PGS Operator's Training Course.

No.	Lesson	Time (H)	Personnel To Be Trained
1	Introduction to PGS	1.0	Crews, Instructors, TSC Personnel
2	Preparation of M2/M3	1.5	Crews, Instructors, TSC Personnel
3	Preparation for Operation (PMCS)	1.0	Crews, Instructors, TSC Personnel
4	Installation of PGS	3.0	Crews, Instructors, TSC Personnel
5	Startup and Alignment	3.0	Crews, Instructors, TSC Personnel
6	Operation of PGS	3.0	Crews, Instructors, TSC Personnel
7	Post Operational Procedures	1.0	Crews, Instructors, TSC Personnel
8	Troubleshooting	1.5	Crews, Instructors, TSC Personnel
9	Preparation of Targets	1.0	Crews, Instructors, TSC Personnel
10	Operation of Control Gun (CGUN)	1.0	Instructors, NCOs, TSC Personnel
11	Presentation of Equipment	2.0	Instructors, NCOs, TSC Personnel
12	Training Data Retrieval System (TDRS) Computer Unit	1.0	Instructors, NCOs, TSC Personnel
13	Setup	3.0	Instructors, NCOs, TSC Personnel
14	After Action Review (AAR) List	4.0	Instructors, NCOs, TSC Personnel
15	After Action Review (AAR) Map	5.0	Instructors, NCOs, TSC Personnel

1-6. TRAINING GUIDANCE.

a. **Time and Date.** Immediately after scheduling the training, inform each instructor (and alternate) of the time and date of PGS training.

b. **Location.** Training site requirements vary for the lessons being trained. Ensure that the proper ranges/training areas are available, serviceable, and satisfy the training lesson to be taught.

c. **PGS Instructors.** It is important that the instructor assigned to teach PGS be fully qualified on PGS. To ensure that effective training is conducted, qualified instructors must be identified early in the planning and scheduling phase. Time and resources permitting, rehearsals of all instruction should be conducted.

1-7. SAFETY.

a. **PGS General Safety Regulations.** General safety regulations as they apply to PGS are included in each lesson and are reinforced by both primary and assistant instructors.

b. **Transceiver Laser Unit.** The PGS transceiver unit laser has been certified as eye-safe; nevertheless, some precautions are necessary. Do not fire the transceiver unit at personnel closer than nine meters or at vehicle optics or binoculars within 25 meters.

c. **Blank Ammunition.** PGS does not require the use of blank ammunition. Units may elect to use blanks to provide additional realism in training. When using blanks, never fire them at personnel or equipment at close ranges. Enforce established blank-firing safety precautions.

d. **Antitank Weapon Effect Simulator System (ATWESS).** When using ATWESS, ensure area is clear 50 m to the rear and 25 m to the sides.

e. **Maneuver.** The use of PGS during force-on-force training may cause violent evasive maneuvers in response to NEAR MISS signals. Therefore, leaders must enforce appropriate safety regulations, especially around vehicles and equipment.

1-8. LIST OF ABBREVIATIONS.

AAR . . . . . After Action Review
ATWESS . . . . . Antitank Weapon Effect Simulation System
BCE . . . . . Bradley Crew Evaluator
BFV . . . . . Bradley Fighting Vehicle
BIT . . . . . Built-In Test
CGUN . . . . . Control Gun
CLS . . . . . Contractor Logistics Support
DTP . . . . . Diagnostic Test Panel

1-8. LIST OF ABBREVIATIONS (Con't).

GPS . . . . . Global Positioning System
HDDU . . . . . Hull Defilade Detector Unit
IAW . . . . . In Accordance With
ISU . . . . . Integrated Sight Unit
ISUCE . . . . . Integrate Sight Unit Commander's Extension
LOS . . . . . Line of Sight
LTID . . . . . Laser Target Interface Device
MILES . . . . . Multiple Integrated Laser Engagement System
NMC . . . . . Not Mission Capable
PGS . . . . . Precision Gunnery System
PMCS . . . . . Preventive Maintenance Checks and Services
RDU . . . . . Retro Detector Unit
RSI . . . . . Remote System Interface
TBOS . . . . . Tracer, Burst, Obscuration Simulator
TCU . . . . . Target Computer Unit
TDRS . . . . . Training Data Retrieval System
TOW . . . . . Tube-Launched, Optically-Tracked, Wire-Guided
TPI . . . . . Turret Position Indicator
TSC . . . . . Training Support Center
TU . . . . . Transceiver Unit
TWGSS . . . . . Tank Weapon Gunnery Simulation System
VIU . . . . . Vehicle Interface Unit